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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,098	12/18/2006	W. Dennis Slafer	59380-050 (MCMK-004)	4357

23630 7590 10/15/2009  
MCDERMOTT WILL & EMERY LLP  
28 STATE STREET  
BOSTON, MA 02109-1775

EXAMINER
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RIVERA, JOSHEL

ART UNIT	PAPER NUMBER
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1791

NOTIFICATION DATE	DELIVERY MODE
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10/15/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

BostonIPDocket@mwe.com

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/588,098		SLAFER, W. DENNIS	
	<b>Examiner</b>		<b>Art Unit</b>	
	JOSHEL RIVERA		1791	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 June 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 1 is objected to because of the following informalities: the claim recites "...a substrate of about 4  $\mu$  to about 1000  $\mu$ ". There is no unit known as " $\mu$ ". The claim will be interpreted as "...a substrate of about 4  $\mu\text{m}$  to about 1000  $\mu\text{m}$ " or "...a substrate of about 4 microns to about 1000 microns" since 1  $\mu\text{m}$  is 1 micron.

2. Additionally claim 1 reads that the optical data storage includes "an elongated linear polymer layer and a substrate of about 4  $\mu\text{m}$  to about 1000  $\mu\text{m}$ ". Page 12 paragraph 40 of the Specification reads that "the optical data storage tape 10 is characterized by a thin (in the approximate range of 4 microns to 1000 microns), elongated tape-like substrate..." Based on this description it is clear that the claim should read "an elongated linear polymer layer with a thickness of about 4  $\mu\text{m}$  to about 1000  $\mu\text{m}$ ". Examiner will interpret the claim as stated above. Appropriate correction is required. Use of term "like" is improper, since it does not specifically define the shape of the substrate.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, 5, 9, 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al (US Patent 5,096,401).
4. With respect to claim 1, Tamura teaches of an apparatus for producing substrate sheet for optical recording media (Abstract), which includes an elongated linear polymer layer that has a thickness of about 0.3 to about 1.5 mm (300  $\mu$ m to 1500  $\mu$ m) (column 6 lines 16 – 18), the apparatus comprising a drum mounted for rotation about a rotation axis (Figure 1 item 3), with a surface with predetermined pattern (column 5 lines 66 – 67) and an ultraviolet lamp to cure the elongated linear polymer layer prior being peeled from the drum (column 6 lines 23 – 27). Tamura states that the drum can be prepared by directly engraving patterns on a mirror-finished roll (column 5 lines 58 – 59). Tamura fails to explicitly disclose that the drum is seamless with a seamless surface.
5. It would have been obvious to one of ordinary skills in the art at the time of the invention to use a seamless drum in Tamura's apparatus. The rationale being that, since the preformatted patterns are directly engraved on the roll the presence of seams

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would affect the pattern which would affect the information present in the patterns, as stated by Tamura (column 5 lines 66 – 67).

6. With regards to claim 2, the teachings of Tamura are presented above.

Additionally Tamura teaches a dispenser for dispensing a liquid between the drum and the elongated linear polymer (Figure 1 item 13 is the dispenser and item 2 is the liquid).

7. With regards to claim 4, the teachings of Tamura are presented above.

Additionally Tamura teaches that the liquid in the dispenser is a ultraviolet-curable resin and the embossments have been transferred to this layer (column 5 lines 1 – 8).

8. With regards to claim 5, the teachings of Tamura are presented above.

Additionally Tamura illustrates the use of backing rollers to press the elongated linear polymer layer against the drum (Figure 1 items 12 and 14).

9. With regards to claim 9, the teachings of Tamura are presented above.

Additionally Tamura states that the patterns that are made on the substrate are grooves (column 5 lines 66 – 68, column 6 lines 1 – 3), where intrinsically grooves would have ridges and bosses.

10. With regards to claim 10, the teachings of Tamura are presented above.

Additionally Tamura states that the preformatted patterns corresponds with preformatting information that are tracking grooves and encoded information in the form

of readable marks (column 5 lines 66 – 68, column 6 lines 1 – 2), the encoded information would intrinsically include header information, servo and error correction information, pre-recorded digital information and pre-recorded analog information.

11. With regards to claim 20, the teachings of Tamura are presented above. Additionally Tamura teaches using a primer in order to improve the adhesion between the polymer layer and the resin layer (column 5 lines 48 – 51), where the resin layer is embossed with recordable information at the same time it's embedded to the polymer layer (Figure 1, column 5 lines 1 – 8, lines 66 – 68).

12. Claims 3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al (US Patent 5,096,401) in view of Norden (WO 97/14142).

13. With regards to claim 3, the teachings of Tamura are presented above. Tamura fails to explicitly disclose using a chemical to soften the surface of the polymer layer.

14. Norden teaches an embodiment where he uses a chemical to soften the polymer layer prior embossing and then using heat in order to remove the softening chemical after embossing (column 5 lines 25 – 31).

15. It would have been obvious to one of ordinary skills in the art at the time of the invention to use a softening chemical on the surface of the polymer layer, as suggested by Norden, in Tamura's apparatus. The rationale being that in order to create an impression on a hard plastic surface would require large amount of force and energy, where using a chemical to soften the surface prior embossing saves money and time.

16. With regards to claim 6 and 7, the teachings of Tamura and Norden are presented above. Additionally Norden teaches using Vacuum Vapor Deposition to coat a reflection layer on top of the embossed surface (column 9 lines 29 – 31).

17. It would have been obvious to one of ordinary skills in the art at the time of the invention to use a Norden's Vacuum Vapor Deposition chamber to apply an optical recording layer on the pattern made by Tamura's apparatus. The rationale being that, as stated by Norden, the use of this layer ensures that, when the registration side of the medium is scanned with a focused light beam, enough light intensity is reflected to yield an acceptable output signal level (column 6 lines 18 – 20). The rationale to use a vacuum chamber would be to eliminate possible contamination by the environment.

18. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al (US Patent 5,096,401) in view of Norden (WO 97/14142) as applied to claim 6 and 7 above, and further in view of Takakuwa et al (US Patent 6,162,519).

19. With regards to claim 8, the teachings of Tamura and Norden are presented above. Tamura and Norden fail to explicitly disclose the use of an optical head array adapted to write recording marks in the optical recording layer over the pattern of optically readable embossments.

20. Takakuwa teaches a method to write recording marks using a laser cutting machine with pattern based on desired data (column 13 lines 12 – 14).

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21. It would have been obvious to one of ordinary skills in the art at the time of the invention to use Takakuwa's laser cutting machine to write recording markings in Tamura and Norden's apparatus. The rationale to do so would have been that by using a laser cutting machine a more precise and detailed pattern can be formed without affecting the prior embossed pattern by using another press or pressing a blade on the surface of the polymer.

22. Claims 11 – 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norden (WO 97/14142) as evidenced by Rosen et al (US Patent 5,627,817).

23. With regards to claim 11, Norden teaches a method of first chemically softening the surface of a polymer layer (column 5 lines 25 – 29), embossing the registration layer to form a pattern of low and high surface regions representing a collection of binary data (column 3 lines 23 – 24) and hardening prior being removed from the drum (column 10 lines 27 – 29). Norden fails to explicitly disclose that the drum is seamless having protrusions on a seamless surface.

24. It would have been obvious to one of ordinary skills in the art at the time of the invention to use a seamless drum in Norden's method. The rationale being that the presence of seams would affect the pattern which would affect the information present in the patterns.



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25. With regards to claim 12, the teachings of Norden are presented above.

Additionally Norden teaches an embodiment where he uses a chemical to soften the surface of the polymer layer prior embossment (column 5 lines 25 – 29).

26. With regards to claim 13, the teachings of Norden are presented above.

Additionally Norden teaches an embodiment of using a ultraviolet-curable material where the embossing takes place and then is cured after embossing (column 5 lines 7 – 16).

27. With regards to claim 14, the teachings of Norden are presented above.

Additionally Norden teaches applying a metallic reflection layer to the embossed surface of the registration layer, where binary data are represented by localized level variations, where the reflection layer ensures that, when the registration side of the medium is scanned with a focused light beam, enough light intensity is reflected to yield an acceptable output signal level (column 6 lines 13 – 20, column 7 lines 19 – 20), which would intrinsically classify this layer as an optical recording layer.

28. With regards to claim 15, the teachings of Norden are presented above.

Additionally Norden teaches that the reflection layer has localized level variations (column 7 lines 19 – 20), which can be achieved by endowing the registration layer with a pattern of pits or bumps what can be represent “0” and “1” (column 7 lines 31 – 34, column 8 lines 1 – 6).

29. With regards to claim 16, the teachings of Norden are presented above.

Additionally Norden teaches using a dielectric layer (column 7 lines 9 – 10), a reflection layer (column 7 lines 27 – 28) and the use of squarylium dye (column 7 lines 1 – 4) that, as stated by Rosen, its functionally equivalent to a phase change layer (column 1 lines 21 – 40).

30. With regards to claim 17, the teachings of Norden are presented above.

Additionally Norden teaches that the embossed forms are usually pits of constant width but variable length (column 4 lines 14 – 15, lines 18 – 23), which would intrinsically comprise of lands and grooves, and these marks are in an helical path (column 4 lines 18 – 23) which would be wobbled.

31. With regards to claim 19, the teachings of Norden are presented above.

Additionally Norden teaches that a registration layer is provided on the substrate and that the embossing is done under pressure (column 3 lines 21 – 24). Intrinsically if the embossing is done under pressure on the registration layer, the layer would be embedded into the polymer layer as the embossments are created.

32. Claims 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norden (WO 97/14142) in view of Tamura et al (US Patent 5,096,401).

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33. With regards to claim 18, the teachings of Norden are presented above. Norden teaches embossing the registration layer (column 4 lines 18 – 23) to represent a collection of binary data (column 3 lines 22 – 24). Norden fails to explicitly disclose the information provided in these embossments.

34. Tamura states that the preformatted patterns corresponds with preformatting information that are tracking grooves and encoded information in the form of readable marks (column 5 lines 66 – 68, column 6 lines 1 – 2), the encoded information would intrinsically include header information, servo and error correction information, pre-recorded digital information and pre-recorded analog information. It would have been obvious to one of ordinary skills in the art at the time of the invention that the information in Taruma's embossments would be the same as in Norden. The rationale being that both Taruma and Norden are manufacturing optical disks in the same field of endeavor, therefore both must contain the same information in the embossments.

### ***Response to Arguments***

35. Applicant's arguments, see page 5, filed June 26, 2009, with respect to the rejection(s) of claim(s) 1 – 5, 7, 9, 10 and 20 under 102 (b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Tamura et al (US Patent 5,096,401). As applicant stated Okubo fails to teach that the substrate has a thickness of 4  $\mu\text{m}$  to 1000  $\mu\text{m}$  and only provided a substrate with a thickness of 1200

µm (1.2 mm). Upon further review Taruma teaches an apparatus similar to the one described by Okubo for substrates with thickness of 300 µm to 1500 µm (0.3 mm to 1.5 mm), which falls into range of 4 m to 1000 µm described by the applicant. Another difference that Taruma has in contrast with Okubo is that also has a solid roll with mirror finish and patterns engraved directly to the roll, as explained in the rejection above.

36. With respect to applicant's arguments for claims 11 – 14 and 16, based on the amendments made to claim 11 the rejection has been withdrawn and a new grounds of rejections have been made. Nevertheless there is no claim limitation regarding that the product made by the applicant's method has to be a recordable or erasable optic tape.

37. Applicant's arguments with respect to claims 6, 8, 15, 17 – 19 have been considered but are moot in view of the new ground(s) of rejection.

38. Additionally, with respect to claim 8, there is no indication in the Specification that a polyolefin substrate cannot be used. Therefore the Examiner does not suggest adding the amendment of "a non-polyolefin" material in claim 1 as suggested by the Applicant.

### ***Conclusion***

39. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHEL RIVERA whose telephone number is (571) 270-7655. The examiner can normally be reached on Monday - Thursday 7:30am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Katarzyna Wyrozebski can be reached on (571) 272-1127. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. R./

Examiner, Art Unit 1791

/KAT WYROZEBSKI/

Supervisory Patent Examiner, Art Unit 1791